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Reconnection experiments in EMHD regime with controllable driving¹ FEIBIN FAN, LONGLONG SANG, QIAOFENG ZHANG, QUANMING LU, WEIXING DING, CAS Key Laboratory of Geoscience Environment, School of Earth and Space Sciences, University of Science and Technology of China, Hefei 230026, China, JINLIN XIE, CAS Key Laboratory of Geoscience Environment, School of Physics, University of Science and Technology of China, Hefei 230026, China — In this work, we conduct an electron magnetohydrodynamics (MHD) magnetic reconnection experiment with guide-field in the Keda linear magnetized plasma (KLMP) device. Two parallel aluminum sticks in axial direction with a separation distance 10 cm are installed in the vacuum chamber. The reconnection field is produced via two identical pulsed currents in same direction applied on the sticks. The ramp up rate of the pulse current is controllable in order to provide inflow drives with different speed. The resistivity is found anomalous which is much larger than the transverse spitzer resistivity. It is also found that the larger drive result in enhanced anomalous resistivity. The generalized Ohm law is studied near the X-point. It is found that the collisional resistive term and electron inertial term are not enough to balance the measured reconnection electric field, which means the electron pressure term is dominant near the Xpoint.

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